PERFORMANCE AND PROGRESS

The core of this Executive Summary summarizes the strategies for each quadrant of the OEP, then describes the purpose and lists the completed, or about to be completed, major milestones for each solution set. Details can be found at http://www.faa.gov/programs/oep. Future versions of the OEP will include more performance data and more detail on schedules and metrics.

Arrival/Departure Rates

Currently, 15 of the top 31 airports cannot meet peak demand. There are two basic strategies to increase terminal throughput. The first strategy is to increase available capacity by opening new runways and modifying procedures to allow new operations on existing runways. The second strategy is to take better advantage of available runway capacity by improving airspace design, procedures and standards for arrivals and departures, pilot and controller workload, use of terminal separation standards farther from the airport, and information exchange and decision support for surface operations.

These strategies must deal with the multiple phases of flight transitioning to and from airports. Improvements in one area (e.g., a new runway) cannot be fully leveraged or realized without associated enhancements (e.g., airspace reconfiguration). Given projected growth in demand over the next ten years, enhancements in the Arrival/Departure quadrant could contribute nearly two thirds of anticipated OEP-based improvements in throughput.

AD-1 Build New Runways

New runways add more capacity than any other measure in the OEP. The FAA is committed to opening new runways with all procedures, airspace, facilities, equipment and staffing in place to deliver the full capabilities described in the airport master plan and as approved through the environmental review process.

Milestones:

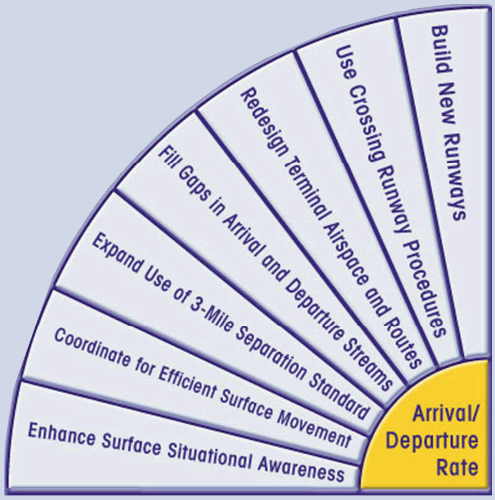
- RTAP, the Runway Template Action Plan, developed to coordinate over 350 activities necessary to commission new runways
- Detroit runway operational December 11, 2001
- Minneapolis moved to 2004 from 2003

AD-2 Use Crossing Runway Procedures

Where new runways may not be possible, the OEP will implement new, safe operations that provide increases in airport throughput, such as land and hold short procedures (LAHSO).

Milestones:

- New dependent operations scheduled for 2003; issues remaining include operational acceptance and use of LAHSO procedures



Capacity typically grows 20 to 50 percent at airports with new runways.

Automated tools that improve aircraft sequencing and balance runway use can increase arrivals and departures by as much as ten percent.

AD-3 Redesign Terminal Airspace and Routes

Enhancements to terminal airspace add efficiency and improve throughput by reducing complexity and de-conflicting interdependent arrival and departure routes. New routing, RNAV procedures and optimized airspace structures give controllers more options for moving traffic and give airspace users more predictable operations.

Milestones:

- Over two dozen RNAV routes in place at BOS, CLT, DFW, EWR, IAD, JFK, LAS, PHL, PHX, and SEA; issues remaining include pilot training
- TAAP (Tactical Altitude Assignment Program) evaluation completed and can be used locally; no national implementation expected based on results
- LAS Four Corner Post Airspace Redesign implemented December 2001
- Yardley-Robbinsville flip-flop, to support New York airspace, implemented December 2001
- Phoenix and San Francisco redesign scheduled for 2002

AD-4 Fill Gaps in Arrival and Departure Streams

Automated tools that improve sequencing and runway balance can increase arrivals and departures by 3-10%.

Milestones:

- TMA in use at seven centers: Denver, Fort Worth, Los Angeles, Minneapolis, Miami, Oakland and Atlanta

AD-5 Expand Use of 3-Mile Separation Standard

Current standards allow for 3-mile separation within 40 miles of a single radar sensor. Where appropriate, reassigning airspace from en route to terminal facilities supports efficiency gains.

Milestones:

- Potomac Consolidation TRACON (PCT): Draft Environmental Impact Statement (DEIS) completed, public meetings scheduled in early 2002, implementation scheduled for 2003
- Santa Barbara terminal expansion scheduled for 2002, contingent on equipment availability

AD-6 Coordinate for Efficient Surface Movement

Delays can be reduced with new tools for airport surface traffic management that include surface surveillance, scheduling or prediction information, and then sharing this information among airports, FAA facilities and airline operational personnel.

Milestones:

- Operational trials scheduled for 2002 and 2003

AD-7 Enhance Surface Situational Awareness

Cockpit moving maps showing pilot position and taxi route will increase situational awareness, improving efficiency and reducing runway incursions.

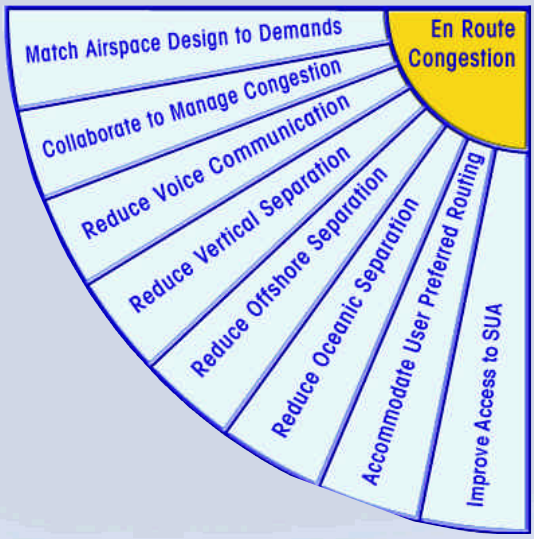
Milestones:

- Limited implementation in 2002 at Memphis and Louisville
- Seven of 65 electronic airport maps published November 2001

En Route Congestion

In the en route arena, capacity is governed by sectors, separation standards and controller workload. The controller uses procedures, routes, equipment and automation tools to assure the safe and efficient flow of aircraft. En route capacity can be balanced to demand in short cycles (e.g. adding controllers to sectors, combining or splitting sectors) and long cycles (e.g. establishing new sectors or routes). When demand exceeds capacity in en route airspace, traffic flow limitations may quickly and significantly ripple into other airspace creating delay for many flights.

En route congestion and near-gridlock conditions characterize key locations. The core strategy for minimizing en route congestion is increased flexibility to prevent gridlock from forming by increases in physical capacity, decreases in controller workload, and better matching capacity and demand. Physical enhancements include adding sectors at airspace choke points and reducing separation standards -- e.g., Domestic Reduced Vertical Separation Minima (RVSM) at higher altitudes and reduced separation in oceanic and offshore areas. Controller workload improvements include automating routine functions and providing new tools for more flexible responses to user requests -- e.g., less time for communication through data link. Matching demand and capacity is accomplished by restructuring airspace, providing access to special use airspace when not otherwise needed, and better managing flows through and around congested airspaces. A comparison of summer 2000 and summer 2001 data, after removing the effects of differences in weather, showed that 2001 had 10 percent better performance.

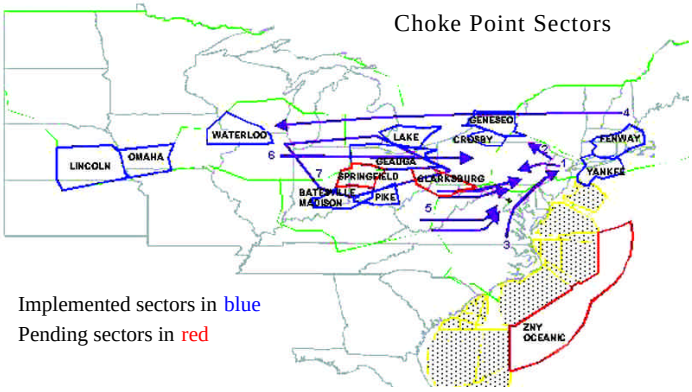


ER-1 Match Airspace Design to Demands

Redesigning en route airspace, including adding or adjusting sectors and redesigning routes, reduce restrictions and increase throughput. More use of modern concepts for airspace management increase flexibility and ability to meet growing demands.

Milestones:

- National Route Program (NRP) procedures modified effective June 2001
- Rerouting aircraft through Canadian airspace routinely used during peak traffic



Eleven new sectors added to relieve bottlenecks.

- Eleven choke point sectors implemented as of December 15, 2001
- Limited Dynamic Resectorization (LDR) Casebook completed and distributed
- Initial scope and design for High Altitude Concept completed
- All remaining choke point sectors scheduled for June 2002
- North-South reroutes scheduled for 2002
- Kansas City Center East End Redesign scheduled for 2003

ER-2 Collaborate to Manage Congestion

Sharing information and jointly developing strategic approaches to daily problems can solve congestion problems in ways that satisfy both users and providers.

Milestones:

- Improved tools and web-based information including the Route Management Tool, Coded Departure Routes, CDMnet (Collaborative Decision Making) and other data sets
- Collaboratively developed operational rules and process improvements in 2001
- Collaborative Convective Forecast Product (CCFP) now available at http://fly.faa.gov/Operations/Weather/CCFP/CCFP_Images/ccfp_dmz.html

ER-3 Reduce Voice Communications

Direct controller/pilot data link communications (CPDLC) reduces voice communication workload for controllers and reduces time spent on routine actions.

Milestones:

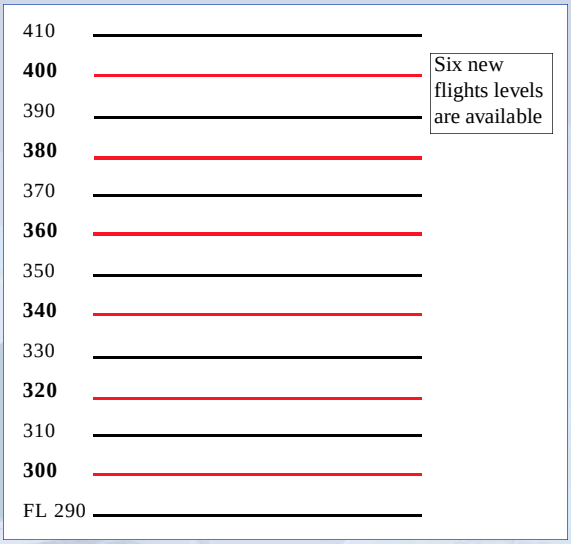
- Preliminary Eurocontrol Test of Air/Ground Data Link (PETAL) 2 Trials completed summer 2001, including first successful Aeronautical Telecommunications Network (ATN) CPDLC revenue flight in Europe
- CPDLC Build 1 is scheduled for June 2002

ER-4 Reduce Vertical Separation

Reducing the current 2000-foot separation to 1000 feet at selected flight levels will reduce congestion between flows by providing new capacity. RVSM makes six additional flight levels available, improving aircraft operating efficiency, controller flexibility and sector capacity.

Milestones:

- Memorandum of Understanding (MOU) addressing DoD RVSM operations finalized October 2001
- Human-in-the-Loop simulations completed November 2001, report expected January 2002



RVSM makes six additional flight levels available that controllers and pilots can use to increase efficiency.

- Industry coordination of Domestic Reduced Vertical Separation Minima (DRVSM) implementation plan scheduled for January 2002
- Notice of Proposed Rule Making (NPRM) to be published April 2002

ER-5 Reduce Offshore Separation

Reduced procedural separation through improved communications and the use of RNAV routes in the Gulf of Mexico provides new capacity.

Milestones:

- RNAV routes to replace J58/86 defined and charted September 2001
- Decision made that high altitude surveillance not feasible at this time
- Complete deployment of production communication buoys moved from 2001 to 2002

ER-6 Reduce Oceanic Separation

Reduced separation (30 miles lateral and 30 miles longitudinal) in the ocean provides new capacity for more efficient flight and reduced delays.

Milestones:

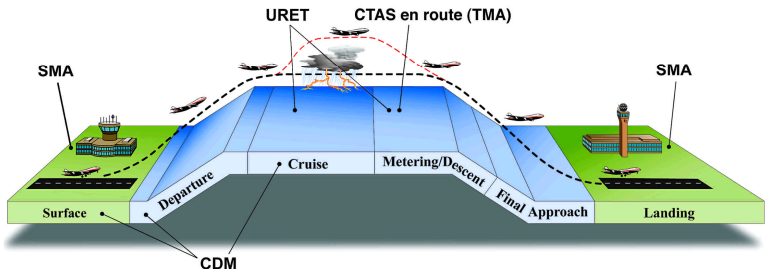
- Advanced Techology and Oceanic Procedures (ATOP) in Oakland scheduled for April 2003
- International Civil Aviation Organization (ICAO) regional procedures and guidance scheduled for 2003

ER-7 Accommodate User Preferred Routing

Adding Free Flight tools such as URET and TMA provide decision support to controllers for approving route change requests and removing airspace restrictions.

Milestones:

- Restrictions were removed at Indianapolis in 2001 based on use of URET
- URET deployed at Kansas City December 2001
- Complete deployment of URET at initial 7 sites by 2002 and accelerate deployment for all remaining Continental United States (CONUS) Air Route Traffic Control Centers (ARTCC)



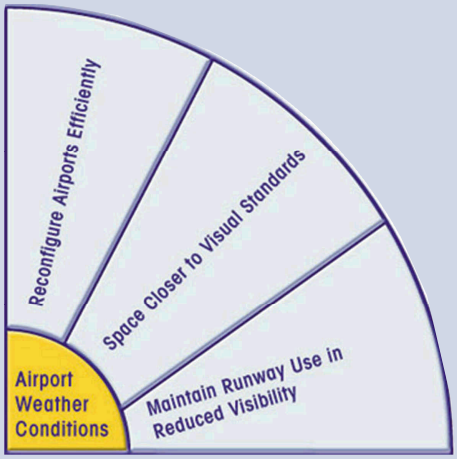
Free Flight tools allow controllers to approve user routing requests and remove restrictions.

ER-8 Improve Access to Special Use Airspace (SUA)

More timely release of military special use airspace (SUA) for civil use, when no longer needed by the military, as well as better information sharing, bring efficiencies by providing more efficient and flexible routing and access for civil aviation.

Milestones:

- Palatka Restricted Area-2906 was scheduled for GA access 24 hours per week in early 2001; based on initial success, weekend access expanded an additional 50 percent



Airport Weather Conditions

For the benchmark airports, typical bad weather operations lower arrival and departure rates 18 percent compared to good weather. For most benchmark airports, the difference between the best and worst delays of the year only require eight hours at the reduced operations levels.

Weather-related reductions in throughput for airports are primarily due to wind or visibility problems that limit the use of runways or require increased spacing between arriving or departing flights. As weather degrades, the spacing applied between aircraft grows, lowering the arrival and departure rates. Large losses in throughput also occur when bad weather requires changes in runway configuration -- time is lost due to the change in configuration and the alternative configuration typically offers a lower throughput. Fallback options may be ineffective because of closely spaced runways or inadequate instrument approaches.

The OEP strategy for addressing weather-related reductions in throughput is to make airport operations less sensitive to weather. This requires more options for runway configurations, improved timing of operation changes to reduce down time, and more consistent spacing of operations as weather degrades. The near-term focus is reducing the impact of changes in runway configurations. Surveillance improvements and procedures to better coordinate operation changes will allow airports to keep closely spaced parallel runways active under a greater variety of weather conditions. In the mid-term, the focus is extending the conditions under which an airport can continue visual operations through cockpit tools and enhanced navigation. In the long-term, improved surface coordination will handle the higher volume. Some airports will add more runways and more instrumented runways to improve the alternative configuration options.

The goal for these changes is to improve performance by as much as 25 percent over today's numbers.

AW-1 Maintain Runway Use in Reduced Visibility

The community goal is to maintain the use of closely spaced parallel runways to provide 4 to 5 additional operations per hour. The near term milestone that supports this goal is Precision Runway Monitor (PRM) operational at five sites by 2002.

Milestones:

- Philadelphia PRM commissioned September 2001; initial operations pending pilot training
- Saint Louis PRM commissioned with limited use
- Minneapolis PRM commissioned; PRM approaches run about twice a day with a goal of 7–10 sessions per day
- National Simultaneous Offset Instrument Approaches (SOIA) standards expected shortly

- San Francisco and New York John F. Kennedy International Airport (JFK) commissioning of PRM expected July 2002
- Wide Area Augmentation System (WAAS) upgrade path decision in 2002

AW-2 Space Closer to Visual Standards

The community goal is operating as close to visual capacity for as long as possible as bad weather begins to limit operations. Improved cockpit displays that identify traffic so pilots have better situational awareness will help continue visual operations.

Milestones:

- United Parcel Service (UPS) using certified Enhanced Visual Approach in visual conditions for data collection and in-service evaluation
- Studies and simulations for Cockpit Display of Traffic Information (CDTI)-enabled flight rules to determine a viable concept of operations, scheduled for 2002

AW-3 Reconfigure Airports Efficiently

Well-orchestrated changes in airport operations can save as much as 10 minutes of down time thus improving arrival and departure rates. The Integrated Terminal Weather System (ITWS) provides predictive capabilities for improved coordination. The community goal is to have ITWS deployed at 34 sites with procedures for sharing information on configuration changes.

Milestones:

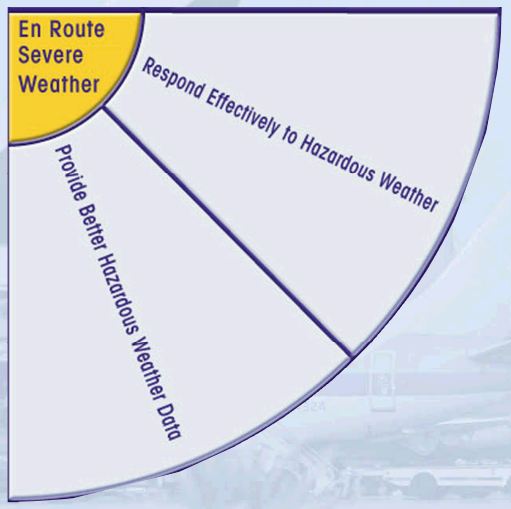
- Operational testing at Houston, Kansas City and New York completed 2001

En Route Severe Weather

Severe weather in en route airspace can block access to key sectors and shift traffic flows to create new congestion points. Imprecise predictions can result in excessive reactions and restrictions. Almost half of the delays and cancellations experienced in the NAS arise from disruptions directly related to the weather, reaction to that weather or the congestion it creates.

En route weather phenomena create a high degree of uncertainty. Difficulty in identifying airspace and aircraft that will be impacted by weather or the resulting congestion is magnified by the uncertainty in the location, movement, and severity of the weather conditions. Extra capacity must be set aside for contingencies and potential congestion arising from shifts in typical flows; without specific location and time data, these measures may be excessive. Adding to uncertainty is the need of individual airspace users to retain flexibility for managing their own contingencies. Without data sharing, these individual actions further degrade the understanding of how forecasted and actual storms affect traffic flows.

Well planned changes for weather may lead to a 10 percent drop in weather delay



The OEP strategy for addressing weather-related congestion is to reduce the uncertainty, and tailor reactions to a finer-grain response, requiring real-time data sharing of forecasts, expected reactions, traffic flow shifts, and operational decision-making. Finer responses to weather-induced congestion mean more options with a range of impacts and more flexible geographic coverage.

Studies show that up to 40 percent of delays due to forecast weather are recoverable. The goal of these solution sets is to reduce delays about 8 percent from year 2000 levels during the severe weather season.

EW-1 Provide Better Hazardous Weather Data

Community goals include improving the quality and broadening the distribution of collaborative convective forecast products and identifying specific flights affected by severe weather.

Milestones:

- ETMS Flow Constrained Area tool deployed
- Information on Runway Visual Range (RVR) at 42 airports via the CDMnet [www.metsci.com/cdm]
- CCFP upgrades implemented in Spring 2002
- Evaluation of corridor integrated weather system planned for Summer 2002

EW-2 Reconfigure Airports Efficiently

Several operational rules and process changes were planned for the 2001 severe weather season. A comparison of days from June through August 2001 against the same period in 2000 showed 150 to 300 fewer delays per day in 2001 for days with similar weather advisories.

Milestones:

- Coded arrival and departure routes incorporated in refined playbook to reduce impact of severe weather on flights not directly affected by storm activity.
- Specific plans for 2002 severe weather season collaboration in handbook February 2002

Industry, FAA, and Airport Alignment

Across the aviation community the transition from OEP discussion to consensus and action has begun. As noted earlier and in the following table, real improvements in NAS performance are emerging from these concerted efforts.